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BENZIN AS A PARASITICIDE.

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The substance to which I desire to direct attention in the present communication is the ordinary commercial article, obtained in the distillation of petroleum, and employed in the arts as a cheap solvent of oily matters, paints, etc. Partly deodorized and re-named "rose-oil," it serves for removing greasy spots from gloves and textile fabrics. It is known to the chemist as a hydro-carbon of varying constitution, and has, like all such bodies, a marked affinity for oxygen. It is often confounded (in ordinary reading) with *benzole* or *benzene*, and I have, therefore, exhibited some of the more important contrasts of the two bodies in tabular form:

BENZIN OR BENZINE.	BENZOLE OR BENZENE.
Distilled from petroleum.	Distilled from coal-tar.
A mixture of hydro-carbons of the "marsh-gas series."	A hydro-carbon of the "aromatic series."
Specific gravity, .670-.675.	Specific gravity, .850.
Chemical formulæ: $\begin{cases} C_5 H_{12} \\ C_6 H_{14} \\ C_8 H_{18} \end{cases}$	Chemical formulæ: $C_6 H_6$
etc., varying in exact constitution, but within definite limits.	Unvarying in constitution.
Commonly used in dissolving oils and pigments, cleaning greasy machinery, textile fabrics, etc.	Used in dissolving gutta-percha, India-rubber, sulphur, phosphorus, iodine, some resins and alkaloids, and by microscopists for dissolving Canada balsam.

I use the above rather simple method of contrast in preference to tables bristling with the hieroglyphic diagrams of atomic constitution with which modern chemistry has familiarized our eyes, if not our understandings. It is the substance described in the first column of the table which forms the subject of the present paper.

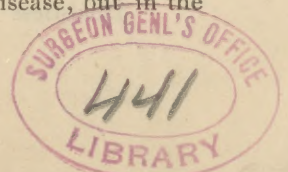
Edward Curtis says of it in the "Reference Handbook of the Medical Sciences," 1885, "Benzin is not used in medicine, but is useful to the pharmacist for its solvent powers over fats, resins, volatile oils, and other bodies."

Many years since, the attention of the writer was attracted to its value as a destroyer of low forms of animal and vegetable life, and when a boy it was his favorable application for the destruction of the larvæ of various parasitic insects (moths and beetles) known as "museum pests," as well as for the removal of molds and other vegetable parasites from bird-skins and insects.

In 1880, during my service as interne at the Cincinnati Hospital, and since then in private practice, it has fallen to my lot to treat a considerable number of cases of the skin disease known as *tinea versicolor*. It was the custom in the hospital to attack the fungus, which is the essential element in the disease, with various parasitocides, of which mercuric chloride was perhaps the favorite. This application (gr. iii to 3i of water) effected an apparent cure for the time being, by destruction of the fungus on the surface, but invariably there would be a relapse in a few days or weeks—minute brownish spots re-appearing in the immediate vicinity of the hair-follicles and thence spreading and coalescing to form the characteristic pale-brownish patches, varying in size from a fraction of an inch to several inches in area. As it was evident that the relapses were due to the re-growth of spores situated in the depths of the hair-follicles, where the watery solutions failed to penetrate, I was led to consider the advisability of using a more penetrating agent, and from my experience elsewhere in its use as a parasiticide, I selected benzin for experimentation.

Selecting a well-marked case, the application was made freely, twice a day, for three days, of a mixture of equal parts of common commercial benzin and tincture of green soap. This was applied by means of a small mop of absorbent cotton. At the same time, as a control experiment, a second case was treated with the bi-chloride solution. The result was that the growth disappeared in both cases, but the second case experienced the usual relapse within a week or ten days. The benzin mixture being now applied, a permanent cure resulted. I have since discarded the admixture of green soap, as superfluous, sometimes diluting the benzin with a little tincture of lavender or other aromatic.

In numerous cases, in private practice, I have found it uniformly successful, not only in this disease, but in the



skin diseases of mycotic origin generally, amongst which the ordinary furuncle or "boil" belongs. In the treatment of the latter important, if not dangerous affection, I have found benzin of marked value as an abortive agent, equal, at least, to the sub-cutaneous injection of carbolic acid, without even the small amount of pain and the slight danger of sloughing, attending the latter method.

The efficacy of benzin in furunculosis is easily demonstrated in that class of cases where one boil is followed, after its rupture, by numerous "seed boils," immediately surrounding its site, or by successive developments of single boils in the same region of the body. Here the prompt disinfection of the affected area, including the depths of the hair follicles, is a most certain method of arresting their progress toward suppuration.

The method of application is very simple. At the first appearance of the little, hard, painful papule, saturate a pledget of absorbent cotton with the remedy and press it firmly, but not forcibly, over the swelling, for about half a minute. Repeat this every hour or two for the first day, after that two or three times a day, as the swelling and pain subside. If suppuration has already taken place, in ever so small an amount, the only remedies, of course, are the knife or spontaneous evacuation. Even with a small amount of pus in the original boil, its size may be limited and the formation of "seed boils" entirely prevented by the prompt use of the parasiticide. Due care should be taken to avoid the vicinity of a fire or light while making the application. No pain attends the application as above described.

Benzin is also the most useful and effective application for the destruction of the troublesome insects known as "jiggers" or chigoes, which, in many tropical, and some temperate countries, excite much pain and annoyance by burrowing into and laying their eggs in the skin. In the ordinary insect, as it occurs in our Southern states, and even in some parts of Ohio, I have found benzin the best remedy, penetrating their burrows and causing the death of the pests. The troublesome itching and irritation due to its movements are largely abated, though a red indurated area, surrounding its location in the tissue, will remain for some days.

Doubtless the remedy would give

equally satisfactory results in scabies, but I have been unable to test it, for lack of clinical material.

I would also suggest its use in trichiniasis, as soon as possible after the ingestion of the infected meat, since a somewhat similar body, benzole, (see table of contrasts) has been credited with good results in this disease. As much as two drachms has been given daily (of benzole) for from four to six days.⁽¹⁾ In another recorded case, benzole was taken in quantity "of one or two ounces, probably,"⁽²⁾ without dangerous symptoms. This would seem to indicate that its congener, benzin, in moderate doses, 3ss to 3i, would be safe, and a remedy worth trying in this fearful and intractable disease.

Woodbury ("Farquharson's Therapeutics and Materia Medica," 1889, records it as used "internally, as a vermifuge," in a dose of π xxx.

Finally, the value of benzin as a solvent of oily secretions should not be forgotten in the preparation of skin areas for antiseptic operations. An agent that can penetrate and disinfect the pores and hair-follicles of the region to be operated upon, has advantages not possessed by any of the watery solutions in common use.

To summarize, we have in common commercial benzin an agent which is cheap, unirritating to the skin, not injuring or staining the finest fabrics, convenient of application, and possessing a wide range of usefulness as a parasiticide and anti-mycotic; its action being greatly aided by its solvent power over oily secretions, by reason of which the chief protection of the parasites is removed.

How it acts, I shall not attempt to explain, further than to note that its marked affinity for oxygen may be the key to its *modus operandi* as a parasiticide. Ignored by physicians generally, though found in every drug-store at ten cents per gallon, and possessing a chemical ancestry (marsh-gas) identical with that of numerous remedies in common use, *e. g.*, ether, chloroform, iodoform, anilin, antisebrin, antipyrin, rhigolene, carbolic acid, etc., its non-use would seem to furnish another example of the truth of the adage, "familiarity breeds contempt."

¹ U. S. Dispensatory, fourteenth edition, Wood & Bache. Quoted from *Boston Med. and Surg. Journal*, xxi, p. 381.

² "Jour. de Pharmacy," Marseilles, 1861, p. 222.